

GLARE SCREEN

April 1, 2002

Description

Section 8-25.1 is supplemented with the following:

This work shall consist of furnishing and constructing permanent and temporary barrier glare screen on concrete barrier in accordance with the Plans, these Specifications, and as directed by the Engineer.

Materials

Section 8-25.2 is supplemented with the following:

Barrier Glare Screen

Barrier glare screen shall consist of modular units with vertical blades mounted on a horizontal base rail. Base rails and blades shall be made of non-warping, non metallic durable polymeric materials; shall be resistant to damage due to impacts, ultraviolet light, ozone, hydrocarbons, and other effects of atmosphere weathering; shall resist stiffening with age; and shall be designed for a minimum life equaling 60 months of outdoor service.

The color of blades shall be gray or green. Only one color shall be used throughout the project. The height of the blade shall be 24 inches. The blade width and spacing shall provide for a minimum 22 degree sight cutoff angle. The length of the unit shall be the same as the length of the concrete barrier that the unit is mounted on. The unit can be composed of smaller sub-units as long as the completed assembly is the same length as the concrete barrier. The unit shall not exceed 4.5 pounds per linear foot.

Brackets and mounting hardware may be metallic or non-metallic. Metallic brackets and anchor hardware shall be stainless steel or galvanized in accordance with ASTM A-153. Anchors shall be a stud mechanical system and shall include the necessary washers. The blade to rail base separation strength shall be a minimum of 1,500 pounds. Anchors shall have a minimum 3,000 pound pull-out and shear strength.

Barrier glare screen shall be selected from approved materials listed in the Qualified Products List.

Laboratory Tests

Three blades shall be cycled at 1000 hours in a weatherometer in accordance with ASTM G 53 (3 hr. 60C UV, 3 hr. 50C CON). The blades shall show no signs of delamination, distress, or discoloration. Physical properties of tensile strength and rigidity shall be maintained within 80 percent of the unconditioned values.

An impact test shall be performed on three partial sections of the modular unit consisting of the base rail and one blade. The temperature shall be 45 F. The modular unit shall be fastened in a similar fashion as to how the system would be used in the field. Each blade shall receive three impacts with a horizontal steel bar traveling at 50 MPH impacting at mid-height on the blade. After

1 impact, the screening unit (blades and base) shall be inspected for the following
2 criteria:

- 3
- 4 1. Any cracking, splitting, or delamination, other than surface cracking
5 evident on only one face of the blade, is considered a failure.
- 6
- 7 2. If the blade leans more than 10 degrees from the vertical it is
8 considered a failure.
- 9
- 10 3. Any separation of the blade from the base is considered a failure.
- 11
- 12 4. Any separation of the base from the attachment is considered a failure.
- 13

14 If an individual blade or base fails any of the above criteria, the product is
15 unacceptable.

16 ***Pre-approval***

17 In order for a particular model of temporary barrier glare screen to become pre-
18 approved, the following conditions must be met:

- 19
- 20
- 21 1. The manufacturer must submit a written request for pre-approval along
22 with samples for each model to be tested to: Materials Engineer,
23 Department of Transportation Material Laboratory, P.O. Box 47365,
24 Olympia, WA 98504-7365. Samples shall be complete with blades,
25 base rail, and mounting hardware and shall be accompanied by the
26 manufacture's written installation procedures.
- 27
- 28 2. The barrier screen will be field impact tested by the State Materials
29 Laboratory to verify compliance with these specifications.
- 30
- 31 3. In lieu of State Materials Laboratory testing, the Lab will accept the
32 results of pre-approved testing performed by the manufacturer or other
33 agencies under the following conditions:
- 34
- 35 a. The State Materials Laboratory is informed of the pre-approval
36 testing sufficiently in advance in order to attend and observe.
37 Attendance will be at the discretion of the Materials
38 Laboratory.
- 39
- 40 b. The results of the testing shall be reported in sufficient detail
41 to enable the State Materials Laboratory to evaluate
42 compliance with these specifications.
- 43

44 The Manufacturer must submit a certified test report, including test data
45 developed by an approved testing laboratory, which demonstrates that the
46 barrier screening complies with the requirements of the specifications. Certified
47 test data supplied by the manufacturer shall be subject to verification by
48 appropriate tests conducted by the State Materials Laboratory.

49

50 Frequency of field testing, evaluation, and pre-approval updating shall be at the
51 sole discretion of the Materials Laboratory.

52

1 **Construction Requirements**

2 Section 8-25.3 is supplemented with the following:

3

4 ***Barrier Glare Screen***

5 The vertical blades shall be attached to the rail base in a positive mechanical
6 manner to prevent unintentional blade rotation or dislocation. Barrier glare
7 screen shall be attached to the top of the barrier using approved anchors and
8 following the manufacturer's recommendations. Each modular unit of 10 feet or
9 less shall be secured to the concrete barrier with anchors at a minimum of three
10 points. Modular units greater than 10 feet in length shall be secured at a
11 minimum of four points. Spanning the joint between concrete barrier sections
12 will not be allowed.

13

14 When the temporary screening is no longer required, the Contractor shall
15 remove the screening units. When noted in the contract that the screening will
16 become the property of the Contracting Agency, the Contractor shall deliver and
17 stockpile the screening units at the location noted in the contract.

18

19 **Measurement**

20 Section 8-25.4 is supplemented with the following:

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22 Barrier glare screen and temporary barrier glare screen will be measured by the
23 linear foot along its completed line and slope.

24

25 **Payment**

26 Section 8-25.5 is supplemented with the following:

27

28 "Barrier Glare Screen", per linear foot.

29 "Temporary Barrier Glare Screen", per linear foot.